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ABSTRACT

Faculty, administrators and support staff are reinventing formal education at the University of Central Florida (UCF) through the World Wide Web and instructional design. Campus services and degree programs are being re-engineered and invented to extend flexible educational opportunities to serve diverse students and faculty. Preliminary research results indicate a high adoption rate among faculty and students for learning online through an institution-wide initiative. Scalability issues are the foremost challenge to administrators and support staff to provide quality Web-based learning environments and services as more faculty and students get involved in teaching and learning on-line. This paper describes the model, process, barriers, benefits, lessons learned and future direction of UCF's Web-based program development. Contains 22 references. (Author)

On-line with the Future: Web-Based Program Development at the University of Central Florida, Designing a University for the 21st Century

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Abstract: Faculty, administrators and support staff are reinventing formal education at the University of Central Florida through the World Wide Web and instructional design. Campus services and degree programs are being re-engineered and invented to extend flexible educational opportunities to serve diverse students and faculty. Preliminary research results indicate a high adoption rate among faculty and students for learning on-line through an institution-wide initiative. Scalability issues are the foremost challenge to administrators and support staff to provide quality web-based learning environments and services as more faculty and students get involved in teaching and learning on-line. This paper describes the model, process, barriers, benefits, lessons learned and future direction of UCF's web-based program development.

Background

Central Florida is one of the fastest-growing regions in the nation. Orlando is a center for high technology and space-related industrial development in addition to being one of the world's most popular tourist destinations. UCF is a metropolitan university. The average student age is 26 and only 2,000 students live on campus. The University is just over 30 years old and serves approximately 29,000 students.

State of Florida projections show that UCF will nearly double in size within 20 years due to increased numbers of high school graduates, adult returning students and a workforce that requires lifelong learning. These projected demographics as well as the change in our nation from an industrial base to an information base, and advances in information technology are all forces re-shaping the educational landscape in Central Florida (Allen, Hartman & Truman, 1997).

UCF is aggressively developing distributed learning programs that use the World Wide Web to meet the needs of its diverse students and faculty. Distributed learning is an alternative paradigm that uses computers, networks and on-line information so powerful that a new pedagogical model is emerging to change the content and process of education (Dede, 1996). At UCF, this pedagogical model is driving the re-design of our university for the 21st century. Networked-focused learning is resulting from the exponential growth of the Internet where student-initiated data gathering and interactive communications make learning potential incomprehensible (Barker & Baker, 1995).

The university has chosen to employ the strategy of asynchronous learning networks (ALN) as a primary approach to create distributed learning to ease existing and projected shortages of classroom space, and meet the need to maintain quality within available resources. Delivering degree programs on-line requires

access to a reliable campus infrastructure and services. Identifying needs and evolving processes requires genuine experimentation. The willingness to change among universities is required (Katz, 1997). It was through the willingness to experiment at UCF that the term "distance learning" was soon replaced with "distributed learning." ALN creation at UCF using distributed technologies has made Simonson's prediction a reality: "distance" as a definition will become relatively unimportant (1995, p12).

Key Ingredients for Redesigning a University

Enabling the ability to teach and learn anytime, anywhere with institutional responsiveness requires a three components: 1) administrative leadership, 2) the technical and workforce infrastructure to fulfill the mission and 3) faculty willing to risk experimentation. The campus infrastructure must also have departments aware, alert and ready to serve students and faculty asynchronously through collaboration with other units. This type of campus responsiveness doesn't happen overnight. A change process must be facilitated to create a campus-wide cultural change. Thoughtful design of the technical infrastructure and staff requirements must come from administrative support and vision. Systematic faculty development enables faculty potential creating a critical mass of transformation. Assessing outcomes for continuous improvement insures cost-benefit gains. Achieving a multifaceted response to consumer demand for increased access, improved quality, and reduced cost of higher education is the concept of a virtual university (Twigg & Oblinger, 1996 p. 21).

Provision of these key technical and training ingredients is not enough to develop high-quality web-based programs and services. Expert facilitation must also take place through administrative leadership to catalyze positive change on an institutional level. A by-product of effective distributed learning using asynchronous techniques is learning communities which mobilize change. The factor enabling mainstream faculty and students to succeed as on-line teachers and learners is facilitated collaborative learning. In successful distributed learning, electronic communities of scholars develop on-line among individual classes, but also among faculty developing courses across colleges and disciplines, web developers and researchers.

Barriers to Formal Education on the Web

Faculty willing to experiment are essential to developing successful web-based learning environments. Some factors that prevent faculty from pursuing technological innovations are: fear of change, fear of time involved, fear of appearing incompetent, fear of technobabble, fear of failure, not knowing where to start, fear of making bad choices, fear of typing, and the fear of reprisals and rejection (Williams, 1996). In addition to these barriers are how efforts of faculty to develop high tech classes often are unappreciated and frowned upon" (Auter & Hannah, 1996). Making data collection part of the course development model is one UCF strategy to compensate for time required to develop instruction and teach on-line.

Provision of adequate campus infrastructure ensures equipment, software and production support to prevent faculty from feeling frustration if they have made a sincere commitment to teach on-line. "If we are to serve them (the faculty) well, we need to show them how the computer can help them do what they do anyway... technology should offer them choices, not requirements" (Killian, 1997). Achieving choice offerings will create self-propelled learners pursuing ambitious, but realistic goals. Albaugh (1997), cites a book published by Larry Cuban in 1989 called Teachers and Machines: the Classroom use of Technology since 1920, where adoption of technology among teachers is achieved when it helps them do better what they are currently doing. Albaugh warns of the danger of reinforcing the status quo by using technology as an aid to teaching instead of allowing the use of technology to transform teaching (p. 5). Cloning the classroom is a common mistake when creating on-line environments. Ben Shneiderman (1997) also warns of the temptation to use "mimicry" when considering what computers should be designed to do. Most often, computers mimic human performance rather than going well beyond human performance.

Administrative leadership for institutionalization of faculty development is essential for creating high-quality web-based programs. Daigle and Jarmon (1997) state that technology-focused faculty development programs should have a goal to become part of the fabric of the institution and agents of its transformation. The barriers of time and space should not interfere with faculty development programs. Faculty development that has significant investment in the human capital infrastructure results in a *multiplier effect* that involves large numbers of faculty regardless of age, interests, discipline or talents. Faculty should be encouraged to become self-sufficient, just in time, lifelong learners. Faculty development programs should be replicable with baseline measures. The program should be connected to the university's strategic plan and the program should have a business plan for measuring effectiveness (Daigle & Jarmon, 1997).

UCF Course Development Model: Techranger v. Loneranger Approach

The "Loneranger", or craft approach to developing on-line courses occurs in many institutions as faculty, student webmasters and a few isolated departments or colleges work in isolation. The Loneranger approach may yield good results, but the institution's ability to scale efforts and maintain quality courses is difficult using this approach. Creating consistent courses within on-line programs is made possible at UCF by using Techranger or professional approach, made up of student and full-time staff dedicated to producing multimedia materials for faculty teaching on-line. Scaling the Techranger approach requires facilitating a train the trainer strategy to help colleges and departments create an administrative "safety net" to support faculty versus the craft approach of a single faculty member going it alone (Sorg & Truman, 1997).

Over the past two years, UCF has made significant investments in key ingredients: technology infrastructure, faculty and student support services, and organizational development to support both regular campus instruction and the asynchronous learning initiative. The Division of Information Technologies and Resources was formed in early 1995, bringing together the Library, Computer Services (academic and administrative computing), Telecommunications, and Instructional Resources into a single administrative unit. The position of Vice Provost for Information Technologies and Resources was created to head this division, which reports to the Provost and Vice President for Academic Affairs. In July of 1997 a new unit was formed to create professional ALN courses and provide related faculty and web research and development support.

UCF Course Development Process

After faculty successful complete a six-week course to learn to teach on-line, high quality web-based learning environments are created through a team that consists of subject matter experts (faculty), instructional and graphics designers, programmers, and cybrarians. At UCF, faculty are not required to possess knowledge of HTML programming or multimedia production to produce on-line courses. Rather, institutional efforts focus on faculty development teaching instructional design for Web-based learning environments (Truman & Sorg, 1997). Technology-based formats such as ALN change the division of labor which are rapidly creating a new class of instructional personnel who support faculty (Jones, 1996). Ten years from now it is predicted that course development teams will be the typical approach to develop curricula and courses (Twigg & Oblinger 1996, p. 14).

Course production is best done when the faculty have taken sufficient time to examine their pedagogical goals. Re-engineering the average course using UCF's faculty development model and team-based process takes one semester. Many schools do not require faculty to learn instructional design to make on-line environments, which may lead to unpredictable results and miss the opportunity to transform the curriculum. Robert Stephens (1992), conducted a follow up study of 170 colleges and universities to examine the role of planning, delivery, evaluation and content selection. Stephens found that instructional design principles are being under utilized in the development, delivery and administration of faculty development programs. Collis and Bremen (1997) used an instructional design class at the University of Twente in the Netherlands for "pedagogical engineering" an on-line course. In addition to using the jigsaw method of distributed class work among the design students, formative evaluation was used as a key to integrating theory and practice (p. 10).

Benefits of UCF's Course Development Process

Student-centered, active learning is one by-product of UCF's simulation course for faculty development called IDL6543. This six-week, mostly asynchronous course teaches faculty to learn to teach on-line. The course and its facilitators attempt to model the use of media, time and interaction to simulate an authentic learning environment for UCF faculty. On-line content and activities, group activities and the use of outside experts replace learning through lecture during class sessions. Asynchronous computer conferencing and synchronous chat are practiced in optional labs that engage learners actively. Noam (1995) states that true teaching and learning are about more than transmitting information. Education is based on mentoring, internalization, identification, role modeling, guidance, socialization, interaction and group activity. Using a combination of face-to-face and technology-mediated communication increases the formation of learning communities over using just face to face meetings or pure mediated systems (Etzioni & Etzioni, 1997).

Computer conferencing allows many more students (and faculty) the opportunity to reflect and participate in class discussions, socialize with classmates or ask questions on their time when it is convenient for them. Active, quality participation in on-line environments requires students to take more responsibility for their own learning and faculty to balance their role as facilitator and coach. Faculty need to balance roles as they retain their role of content expert and facilitate deeper learning by explaining, clarifying, directing and helping learners construct their own knowledge. UCF faculty taking IDL6543 experience the role of student in an on-line environment to better manage their role as an on-line teacher. The IDL6543 class has a waiting list of interested faculty on campus, and local educators from schools, community colleges and local military instructors.

Lessons Learned

Critical mass in developing web-based programs and services is achieved when the right combinations of faculty enthusiasm, technological infrastructure and administrative support lead to the recognition of pedagogical opportunities. Ideas breed, energies are focused, risks are managed and prior lessons are learned through facilitated learning communities among faculty and developers. Maintaining faculty cohorts promote the rapid adoption of pedagogical models, evaluation of Web-based tools and the creation of solutions. Conducting a formal faculty development class (IDL6543) is appropriate for those faculty committed or selected to create on-line courses, but informal brown bag lunches held regularly expand the development of learning communities among the mainstream faculty.

Facilitating the change in the shift in role as an on-line teacher leads to more student-centered, active learning. Faculty development programs that are collaborative and provide just in time learning prevent problems and increase satisfaction rates among faculty and eventually their students. Philip Repp (1996) describes learning that is student-centered versus instructor-centered teaching where: students discover knowledge, there is continuous student and course assessment, learning includes student-driven episodes that are observed by others (not only by the teacher), students help define the questions, students take proactive and active roles, learning is collaborative, competitive performance is valued, productivity is judged by student learning not faculty workload, faculty facilitate discovery and structure questions then coach students, and finally the focus is on the creation of learning environments versus typical classroom experiences (p. 53).

Learning technological skills is only part of the change process faculty must embrace to be successful on-line teachers. Faculty must find the balance of their role as facilitator and coach rather than pure subject matter expert and curriculum source. Students must engage in inquiry that goes beyond the walls of the classroom (McMahen and Dawsen 1995). At UCF, faculty teaching on-line remain active in faculty development by attending brown bag lunches and giving presentations as "web vets" to their peers. As of July 1998, approximately 130 faculty have been involved in on-line course delivery and the faculty development course, IDL6543.

Future Directions

In July 1997, a pilot study was launched to examine teaching and learning in the ALN environment in an effort to determine the impact of on-line courses on both faculty and students. This pilot study is focusing on five areas of investigation:

- Demographics of students who enroll in ALN courses;
- Perceptions of students who have enrolled in ALN courses;
- Perceptions of faculty toward the experience of teaching in an ALN setting;
- Assessing student outcomes in ALN and traditional environments; and
- Identifying best practice ALN courses on the UCF campus.

In the near future, the UCF Course Development unit will take on broader projects to design web-based software, systems and solutions to support both course delivery and service delivery for campus needs. UCF is a testbed for Educom's (www.educom.edu) Instructional Management System (IMS – www.ims.org) that is working on producing technical standards for web-based instructional use.

UCF will continue to experiment building on-line courses and services to support students and faculty and measure the effectiveness of learning outcomes and faculty and student satisfaction. Heterick and Twigg (1997) assert that network-delivered, computer-mediated learning experiences will dominate the post-secondary learning in the decades ahead. UCF lessons learned in designing learning environments for the 21st century will help it and others use information technology wisely to create educational opportunities and make its on- and off- campus community assessable anytime, anywhere.

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